

ABSTRACT

EXTERNAL CAVITY LASER WITH HIGH SPECTRAL PURITY OUTPUT

- [0045] A laser apparatus and method that provide for suppression of source spontaneous emission (SSE) and amplified spontaneous emission (ASE) light in laser output with minimal intracavity loss. The apparatus comprises a gain medium emitting a light beam, a wavelength element positioned in the light beam, and a non-reciprocal pickoff positioned in the light beam between the gain medium and wavelength element. The non-reciprocal pickoff may comprise a polarization-dependent beam splitter and a non-reciprocal polarization rotator positioned in the light beam before the wavelength selection element. The non-reciprocal pickoff may further comprise a reciprocal polarization rotator positioned in the light beam after the polarization-dependent beam splitter. The method may comprise emitting a light beam from a gain medium outward along an optical path, allowing the outward light beam to interact with a tunable element, returning a spectrally cleaned light beam along the optical path to the gain medium from the tunable element, and non-reciprocally picking off a portion of the returning, spectrally cleaned light beam from the optical path and directing the portion along an output path.